



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant : Bobby Hu  
Serial No : 09/942,061  
Filed : August 29, 2001  
Title : BIASING ARRANGEMENT  
FOR A PAWL OF A  
REVERSIBLE RATCHET-  
TYPE WRENCH  
Docket No : 15722-209CON  
(formerly CFP-1080CA)

Group Art Unit: 3723

Examiner: H. Shakeri

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TECHNOLOGY CENTER R3700

Commissioner of Patents  
Washington, DC 20231

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COMMISSIONER OF PATENTS AND TRADEMARKS,  
WASHINGTON, D.C. 20231, ON MARCH 10, 2003 (37 CFR  
1.8a). *Ala Kamrath*

**APPEAL**

Dear Sir:

This is an Appeal from the rejection of the Office communication mailed April 3, 2002 in the above-identified application.

The claims on appeal are appended hereto.

A check for \$160.00 is enclosed to cover the appeal brief fees. The Commissioner is authorized to charge any deficiency or credit any over-payment to Deposit Account 50-1188.

Appellants hereby waives an oral hearing.

As requested by the Office, and for the convenience of the Board, Appellants' Brief is presented in triplicate.

Respectfully submitted,

Bobby Hu

By: *Ala Kamrath*

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Dated: March 10, 2003



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Assistant Commissioner for Patents  
Washington, D.C. 20231

**APPEAL BRIEF**

Dear Sir:

In response to the office communication mailed April 3, 2002, appellant wishes to appeal the rejections of Examiner Shakeri.

(1) REAL PARTY IN INTEREST

The present application has not been assigned and is owned by the Inventor.

(2) RELATED APPEALS AND INTERFERENCES

None

(3) STATUS OF CLAIMS

Claims 21-25, 40, 41 and 57-59 are rejected under 35 USC § 103(a). Claims 21-25, 40, 41 and 57-59 are rejected under the judicially created doctrine of obviousness-type double patenting.

(4) STATUS OF AMENDMENTS

Originally filed claims 21 and 25 were amended and claims 40 and 41 were added in a PRELIMINARY AMENDMENT included at filing. Claims 21 and 41 were amended and claims 57-59 were added in an AMENDMENT mailed on February 19, 2002. A personal interview was held on May 23, 2002, which interview did not reach an agreement. An Amendment After Final has been filed concurrently herewith to cancel claims 42-56 from this application to simplify issues on appeal.

(5) SUMMARY OF THE INVENTION

A reversible ratchet-type wrench (10) includes a handle (12) and a head (11) extended from the handle (12) and having a hole (13). A web (17) is defined between the handle (12) and the head (11), and a cavity (14) is defined in the web (17) and communicated with the hole (13). The web (17) further includes a compartment (15) communicating with the cavity (14). A drive member (20) is rotatably mounted in the hole (13) of the head (11). A pawl (40) is mounted in the cavity (14) and includes a first side with ratchet teeth (41) for releasably engaging with teeth (21) on an outer periphery of the drive member (20). A switch member (50) includes a turn-piece (51) for manual operation and an actuating plate (52) extended from the turn-piece (51) and is rotatably received in the compartment (15) of the head (11). The switch member (50) is switchable between two positions for changing ratcheting direction of the drive member (20). The actuating plate (52) includes a first receptacle (521) that faces a recess (42) of the pawl (40). A peg (91) has a first end movably received in the recess (42) of the pawl (40) and a second end received in the first receptacle (521) of the switch member (50). The second end of the peg (91) has a second receptacle (911). A spring (92) is located in the first and second receptacles (521, 911). The peg (91) and spring (92) are

rotatable with the switch member (50) and bias the pawl (40) to engage the drive member (20).

(6) ISSUES

Are claims 21, 23, 41 and 57-59 unpatentable under 35 USC § 103(a) as being obvious over Kilness (U.S. Patent No. 3,265,171) in view of Tuttle (U.S. Patent No. 1,426,127)? Are claims 22, 25 and 40 unpatentable as being obvious over Kilness in view of Tuttle and further in view of Chow (U.S. Patent No. 5,533,427)? Is claim 24 unpatentable under 35 U.S.C. § 103(a) as being obvious over Kilness in view of Tuttle and further in view of Arnold (U.S. Patent No. 5,178,047)? Are claims 21-25, 40, 41 and 57-59 unpatentable under the judicially created doctrine of obviousness-type double patenting over U.S. Patent No. 6,282,992? Are claims 21-25, 40, 41 and 57-59 unpatentable under the judicially created doctrine of obviousness-type double patenting over U.S. Patent No. 6,282,991 in view of Kress? Are claims 21-25, 40, 41 and 57-59 unpatentable under the judicially created doctrine of obviousness-type double patenting over U.S. Patent No. 6,453,779 in view of McCann (U.S. Patent No. 5,957,009)? Are claims 21-25, 40, 41 and 57-59 unpatentable under the judicially created doctrine of obviousness-type double patenting of U.S. Patent No. 6,457,389 in view of McCann and Chen (U.S. Patent No. 6,164,167)? Are claims 21-25, 40, 41 and 57-59 unpatentable under the judicially created doctrine of provisional obviousness-type double patenting over U.S. Publication No. 2002-0112573-A1 in view of Fosella (U.S. Patent No. 5,076,121), Kress, McCann and Chen? Are claims 21-25, 40, 41 and 57-59 unpatentable under the judicially created doctrine of provisional obviousness-type double patenting over U.S. Publication No. 2002-0166416-A1 in view of McCann and Chen?

(7) GROUPING OF CLAIMS

Claims 21-25, 40, 41 and 57-59 can be grouped together. However, claims 57 and 58 particularly define the recited receptacles of claim 21 to prevent an imaginative reading that a spring slideable on a pin is in a receptacle, which reading was previously applied but is not believed being applied currently.

(8) ARGUMENT

Rejections under 35 USC § 103(a)

The Examiner has identified structure which is contended to show that individual elements recited in the claims are old in the field of ratcheting-type wrenches. Basically, the Examiner is contending that since the elements are old and would be known to a person working in the art of ratcheting-type wrenches, the combination of elements recited in the claims is obvious. The claims of this application are allowable because the Examiner is improperly utilizing hindsight in first selecting elements from each of the individual patents (while discarding the other elements taught therein) and then combining those elements in a way which is not suggested by the prior art but is motivated only by the attempt to meet the recitations of the claims. Further, in the combination contended by the Examiner, one of the elements is being utilized for a different purpose than taught and which is not suggested by the prior art.

Particularly, Kilness discloses a pawl 21 with ratchet teeth 22 for engaging with teeth 14 of a drive member 12 and a rotatable switch member 23 including a receptacle 28 which slideably receives a peg 25 having its opposite end received in a recess 27 of the pawl 21. Peg 25 is biased by a spring 29 acting between the switch member 23 and a shoulder 30 on the peg 25 and located outside of the receptacle 28. By rotating switch member 23, the pawl 21 is moved to opposite sides of its recess 20 and thereby allowing rotation of the drive member 12 in either clockwise or counterclockwise directions.

Tuttle shows a slideable dog or pawl 24 having a circular portion formed in its lower end into which fits a coiled spring 25 which urges the pawl 24 in a direction toward a drive member 17. The active end 26 of the pawl 24 includes an edge 27 between flattened surfaces 28 and 29 and which engages with teeth of the drive member 17. Tuttle allows rotation in only one direction and does not allow rotation of the drive member 17 in the opposite direction (which must be performed by physically inverting the entire wrench).

In the rejection under 35 U.S.C. §103, the Examiner indicates:

It was the intention of the Examiner to show that these features claimed, i.e., different type of pawls, and actuating means, are old and would be within the knowledge of one of ordinary skill in the art.

However, even assuming that all of the features claimed are old and within the knowledge of one of ordinary skill in the art does not mean that the combination of features is obvious. Specifically, the CAFC in Environmental Designs, Ltd., v. Union Oil Co. of Cal., 218 USPQ 865, 870 (1983) stated:

All the pieces of the present invention were known in the art,... That all elements of an invention may have been old (the normal situation), or some old and some new, or all new, is however, simply irrelevant. Virtually all inventions are combinations and virtually all are combinations of old elements. A court must consider what the prior art as a whole would have suggested to one skilled in the art. (Case citations.)

Furthermore, the CAFC in American Hoist & Derrick Co., v. Sowa & Sons, Inc., 220 USPQ 763, 771 (1984) quoted:

A patentable invention \*\*\* may result even if the inventor has, in effect, merely combined features, old in the art, for their known purpose, without producing anything beyond the results inherent in their use. (Emphasis theirs.)

These decisions recognize that invention can result from the selection of old features. As stated by Judge Hand in B.G. Corp. v. Walter Kidde Co., 79 F.2d 20, 22, 26 USPQ 288, 289-290 (2<sup>nd</sup> Cir. 1935):

All machines are made up of the same elements; rods, pawls, pitmans, journals, toggles, gears, cams, and the like, all acting their part as they always do and always must. \* \* \* But the elements are capable of an infinity of permutations and the selection of that group which proves serviceable to a given need may require high degree of originality. It is that act of selection which is the invention \* \* \*.

In the present rejection, the Examiner generally first attempts to show the claimed features are old and known in the art. However, it is only after the present disclosure is known would one think to combine the certain aspects selected from the Kilness and Tuttle references. It is then submitted that such combination is improper because it requires considerable application of hindsight, hindsight that is gained only through applicant's disclosure. Specifically, the CAFC in Ecolochem Inc. v. Southern California Edison Co., 227 F.3d 1361, 56 USPQ2d 1065 (2000) stated:

Our case law makes clear that the best defense against hindsight-based obviousness analysis is the rigorous application of the requirement for a showing of a teaching or motivation to combine the prior art references. See Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617. "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability -- the essence of hindsight." Id.

"When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references." In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998) (citing In re Geiger, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987)). The same principle applies to invalidation. "Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent

some teaching or suggestion supporting the combination.” ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Although the suggestion to combine references may flow from the nature of the problem, see Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), “[d]efining the problem in terms of its solution reveals improper hindsight in the selection of the prior art relevant to obviousness,” Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH, 139 F.3d 877, 880, 45 USPQ2d 1977, 1981 (Fed. Cir. 1998). Therefore, “[w]hen determining the patentability of a claimed invention which combines two known elements, ‘the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.’” In re Beattie, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (quoting Lindemann, 730 F.2d at 1462, 221 USPQ at 488).

In this case, the district court used the ‘411 patent as a blueprint, with the Houghton process as the main structural diagram, and looked to other prior art for the elements present in the patent but missing from the Houghton process. The district court opinion does not discuss any specific evidence of motivation to combine, but only makes conclusory statements. “Broad conclusory statements regarding the teaching of multiple references, standing alone, are not ‘evidence.’” Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

\* \* \*

The absence of a convincing discussion of the specific sources of the motivation to combine the prior art references, particularly in light of the strength of prior art teaching away from the use of the Houghton process, is a critical omission in the district court’s obviousness analysis, which mainly discusses the ways that the multiple prior art references can be combined to read on the claimed invention.

\* \* \*

Because we do not discern any evidentiary basis for the finding by the district court that there was a suggestion, teaching, or motivation to combine the prior art references cited against the claimed invention, the district court’s conclusion of obviousness cannot stand. The

implicit generalized finding by the district court that, when one of ordinary skill in the art was faced with the problem of deoxygenating water for use in a nuclear power plant and the Houghton article, the combination claimed by Ecolochem in the '411 patent would have been obvious is insufficient. We have previously held that "[t]he suggestion to combine may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved." WMS Gaming, Inc. v. International Game Tech., 184 F.3d 1339, 1355, 51 USPQ2d 1385, 1397 (Fed. Cir. 1999). However, there still must be evidence that "a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." In re Rouffet, 149 F.3d at 1357, 47 USPQ2d at 1456; see also In re Werner Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("[A] rejection cannot be predicated on the mere identification . . . of individual components of claimed limitations. Rather, particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed."). Here, there was no such evidence presented.

Turning to the present application, it is respectfully submitted that the Examiner's contentions are incorrect for several reasons. First, Tuttle shows pawl 24 and spring 25 which are restrained from movement relative to drive member 17 in a single direction by recess 23 for ratcheting a rotatable drive member. This is a similar function as pawl 21, switch member 23, peg 25 and spring 29 which move in two directions relative to drive member 12 of Kilness. It is respectfully submitted that it could be obvious to modify Kilness to replace pawl 21, switch member 23, peg 25, spring 29 and recesses 20, 24 and 26 thereof with pawl 24, spring 25 and recess 23 of Tuttle for ratcheting a rotatable member, but this is not the structure recited in the claims of this application. However, the Examiner is not modifying Kilness in that manner and particularly instead appears to contend

that only pawl 24 and spring 25 selected from Tuttle can be substituted for the peg 25 and spring 29 of Kilness. There is no suggestion in Tuttle that pawl 24 and spring 25 thereof could be utilized for any function other than as disclosed and in particular could be utilized to interconnect a rotatable shift member and a shiftable pawl. Similarly, Kilness does not suggest that its pawl 21, switch member 23, peg 25, spring 29 and recesses 20, 24, and 26 are deficient, could be improved or could be performed by other "means." There is no evidence of any kind of a suggestion, teaching or motivation of any kind to combine the prior art except for the broad conclusory statement by the Examiner.

The Examiner appears to concede that the differences between the invention of the present application and the prior art. However, the Examiner contends:

... applicant has not disclosed that utilizing this embodiment solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the actuating means as disclosed by other embodiments... The two are art recognized functional equivalents.

It is respectfully requested that the Examiner identify what evidence is there of any art recognition and more importantly what is functional equivalent. In this regard, it is respectfully submitted that a **ratcheting-type wrench** including a pawl 21, switch member 23, peg 25 and spring 29 movable in two directions of the type of Kilness and a **ratcheting-type wrench** including a pawl 24 and spring 25 which is constrained to move in a single direction of the type of Tuttle may be functional equivalents or that pawl 21, switch member 23, peg 25, spring 29 and recesses 20, 24 and 26 of Kilness and pawl 24, spring 25 and recess 23 of Tuttle may be functional equivalents, i.e. the result is a ratcheting action on a drive member in a single direction (but not in two directions as Tuttle does not have a reverse function). However, the structure and manner of accomplishing that result are different in these two types of ratcheting-type wrenches. It appears that the

Examiner contends that if the end result is functionally equivalent, then the differences between the structures are obvious variations. It should be appreciated that the Examiner's contention is merely a broad conclusory statement and does not provide any evidence that the differences are obvious variations.

However, even assuming that they were, this is not a proper ground for rejection. As set forth in MPEP § 2144.06:

In re Scott, 323 F.2d 1016, 139 USPQ 297 (CCPA 1963) . . . the court reversed, holding that components which are functionally or mechanically equivalent are not necessarily obvious in view of one another . . .

Examining the Scott decision, the CCPA held:

We disagree with the supposed logic of the Patent Office position. The Examiner and the board appear to hold that the mere existence of "functional and mechanical equivalence" establishes "obviousness." We think this involves a non-sequitur. Expedients which are functionally equivalent to each other are not necessarily obvious in view of one another. The statutory mandate of 35 U.S.C. 103 is that the claimed subject matter be unobvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. [Emphasis theirs].

Likewise, as stated by the CCPA in In re Flint, 141 U.S.P.Q. 299, (1964):

The defect which we find in the reasoning employed below [i.e. the invention did not attain a result or function not attained by the prior art] to support the rejection here is not only that it ignores the express provision of the statute as stated in section 103 but that it also ignores the fact that it is advantageous to the public in the promotion of progress of the useful arts, the Constitutional objective of the patent law, to provide inducement for the invention of devices which are the functional equivalents of devices already known. It is not the object of the policy behind the patent system to encourage satisfaction with or commercialization only of the first device for performing a given function that happens to come along. And for those who may be interested in promoting competition in the interest of the consuming public, the greater the number of functionally equivalent devices

which are encouraged onto the market by patent protection, the better off the consumer will be. Therefore the test is obviousness of the invention and not whether it serves the same purpose as previous inventions. [emphasis theirs, material in brackets added]

It should be clear that even if the ratcheting-type wrenches or the ratcheting mechanisms of Kilness and Tuttle are functional equivalents, the prior art makes no suggestion of the manner or desirability of modifying the respective structures to meet the recitations of the claims of the present application.

It is then respectfully submitted that the rejection under 35 USC § 103 of the claims of this application has been overcome.

#### Double Patenting Rejections

As set forth in MPEP § 804:

Any obviousness-type double patenting rejection should make clear:

(A) The differences between the inventions defined by the conflicting claims – a claim in the patent compared to a claim in the application; and

(B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim in issue is an obvious variation of the invention defined in a claim in the patent.

a) U.S. Patent No. 6,282,992

Applicant agrees to file a terminal disclaimer in this application relating to U.S. Patent No. 6,282,992.

b) U.S. Patent No. 6,282,991

The Examiner concedes that U.S. Patent No. 6,282,991 does not teach "a peg with a receptacle" and attempts to rely upon Kress to supply this deficiency. Kress relates to a ratcheting-type wrench utilizing a rotatable pawl. In particular, Kress teaches a

... pawl 25 .... having oppositely-disposed cylindrical surface portions 39 complementary to the cylindrical wall of the recess 26 and of dimensions such as to provide only a sufficient clearance to permit the pawl to rotate in the recess (page 1, line 107 to page 2, line 3 of Kress).

Kress also teaches that the pawl 25 is rotated by a manipulator 46 between two positions allowing rotation of the ratchet wheel 24 in opposite directions. The pawl is held in one of the two rotatable positions by:

a plunger 41 and spring 42 mounted in a recess 43 in the body member of the wrench and a pair of recesses 44 in the pawl into either of which the plunger 41 may be thrust by the spring 42 when moved into registration with the throat of the recess 43 (page 2, lines 18-23 of Kress).

Kress shows plunger 41 and spring 42 which are restrained from movement in a single direction by recess 43 for holding a rotatable member (in Kress' case, pawl 25) in one of two rotation positions. This is the identical function of ball 201 and spring 202 of U.S. Patent No. 6,282,991. It is respectfully submitted that it could be obvious to modify U.S. Patent No. 6,282,991 to replace ball 201 and spring 202 thereof with only plunger 41 and spring 42 selected from Kress, but this is not the structure recited in the claims of this application. However, the Examiner is not modifying U.S. Patent No. 6,282,991 in that manner and particularly instead appears to contend that plunger 41 and spring 42 of Kress can be substituted for the spring 60 of Figures 2-5 or the pin 70 of Figure 8 of U.S. Patent No. 6,282,991. There is no suggestion in Kress that plunger 41 and spring 42 thereof could be utilized for any function other than as disclosed and in particular could be utilized to interconnect a rotatable switch member and a shiftable pawl. Similarly, U.S. Patent No. 6,282,991 does not suggest that its rotatable switch member 50, pawl 40, its spring 60 or pin 70, and their recesses are deficient, could be improved, or could be performed by other structure. There is

no evidence of any kind of a suggestion, teaching or motivation of any kind to combine the prior art except for the broad conclusory statement by the Examiner of "art recognized functional equivalents" (which has been shown to be improper earlier).

It is respectfully submitted that the double patenting rejection based upon U.S. Patent No. 6,282,991 has been overcome.

c) U.S. Patent No. 6,453,779

U.S. Patent No. 6,453,779 shows a flat pin 20 received in a spring 21. This is similar to Kilness. Specifically, U.S. Patent No. 6,453,779 is advantageous over Kilness in that the combined length of the spring and pin can be reduced in U.S. Patent No. 6,453,779 compared to that of Kilness. However, the force transmission between the pin and receptacle in Kilness and in the present invention is greater than possible through the pin, spring, and receptacle as would occur in U.S. Patent No. 6,453,779. McCann shows a spring 44 received in an opening 44 of a rotatable actuator 40 and having an arm 442 received in hole 32 of a pawl 30. Thus, neither U.S. Patent No. 6,453,779 or McCann teaches the structure recited in the present application and the Examiner has not set forth any basis why the present invention would be suggested thereby.

Thus, it is respectfully submitted that the double-patenting rejection based upon U.S. Patent No. 6,453,779 has been overcome.

d) U.S. Patent No. 6,457,389 and Publication No. 2002/0166416

It should be appreciated that the present application has an effective filing date prior to Patent No. 6,457,389 and Publication No. 2002/0166416. Based upon a twenty year term from filing, the term of any patent issuing based upon this application would be unaffected by U.S. Patent No. 6,457,389 and/or any patent issuing based upon Publication No. 2002/0166416. Thus, there is no extension of

patent exclusivity in the present application. Therefore, as there is no extension, there is no double-patenting.

There is domination of the claims of the present application over the structure recited in the claims of U.S. Patent No. 6,457,389 and Publication No. 2002/0166416. However, such domination cannot support a double-patenting rejection. The Examiner should recognize that the present application does not suggest the structure recited in U.S. Patent No. 6,457,389 and Publication No. 2002/0166416. It is respectfully submitted that a two-way obviousness test must be applied in the present application, which two-way test has not been performed and would not result in a double-patenting rejection had it been performed.

It is respectfully submitted that the double-patenting rejection based upon U.S. Patent No. 6,457,389 or Publication No. 2002/0166416 has been overcome.

e) U.S. Patent Publication No. 2002/0112573-A1

The Examiner concedes that U.S. Publication No. 2002/0112573-A1 does not teach a peg with a receptacle, but relies upon Kress and Fosella. It should be appreciated that reliance based upon Kress is defective as set forth in regard to U.S. Patent No. 6,282,991. Fosella shows another application of a spring-loaded plunger in a ratchet wrench of a different type (rotatable pawl) than the present invention. Again, the Examiner appears to contend that the existence of a recited element somewhere in the art is sufficient to establish obviousness of the element in all combinations, whether or not there is any suggestion or motivation to modify the prior art.

Thus, it is respectfully submitted that the provisional double-patenting rejection based upon U.S. Publication No. 2002/0112573-A1 has been overcome.

(9) CONCLUSION

Therefore, since the claims of the present application have been shown to include limitations directed to the features of applicant's ratcheting-type wrench

which are neither shown, described, taught, nor alluded to in any of the references cited by the Examiner and by the applicant, whether those references are taken singly or in any combination, the Board of Appeals is requested to reverse the rejections of the Examiner, allow claims 21-25, 40, 41 and 57-59 of the present application and to pass this application to issue.

Respectfully submitted,

Bobby Hu

By: 

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Dated: March 10, 2003

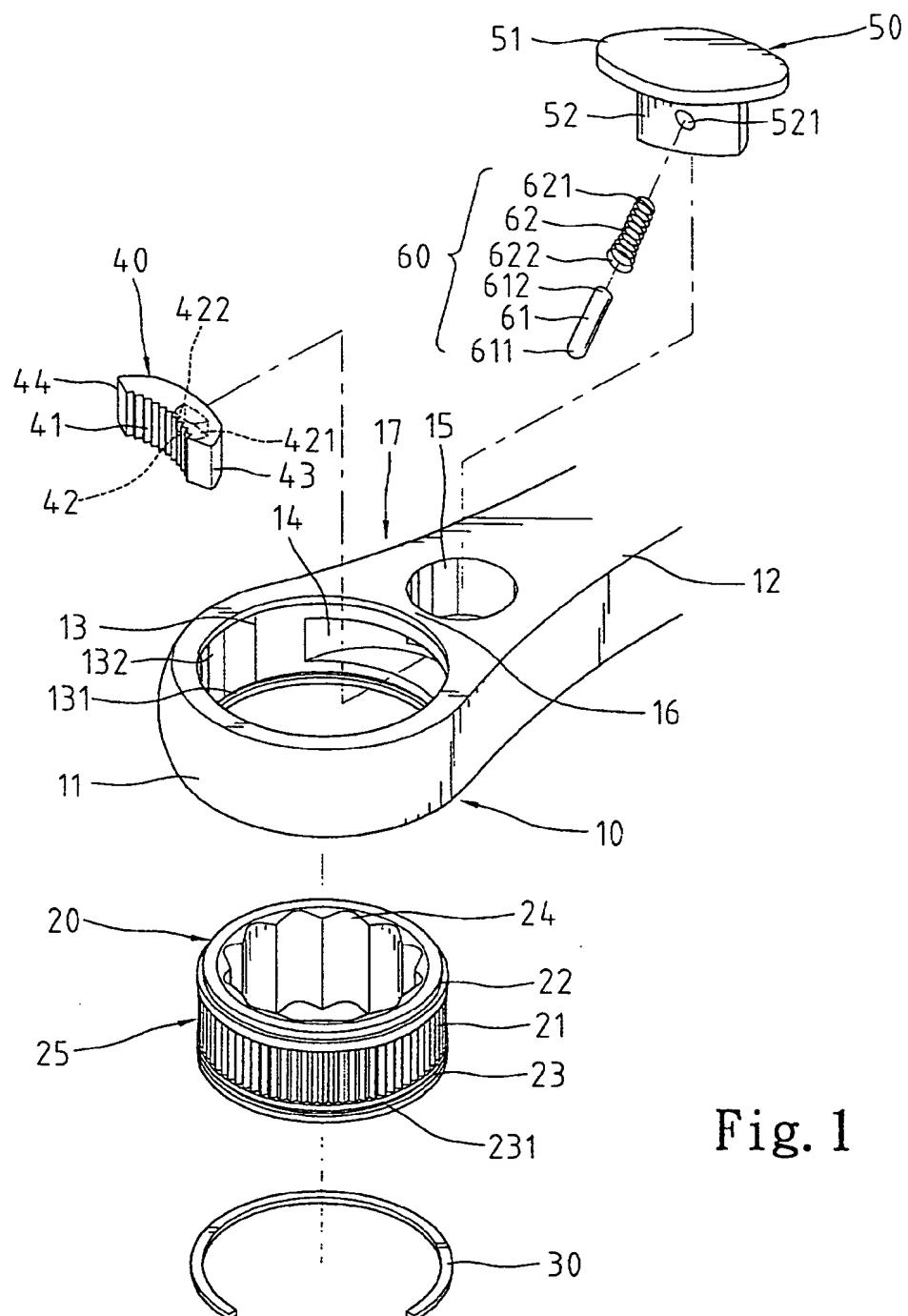


Fig. 1

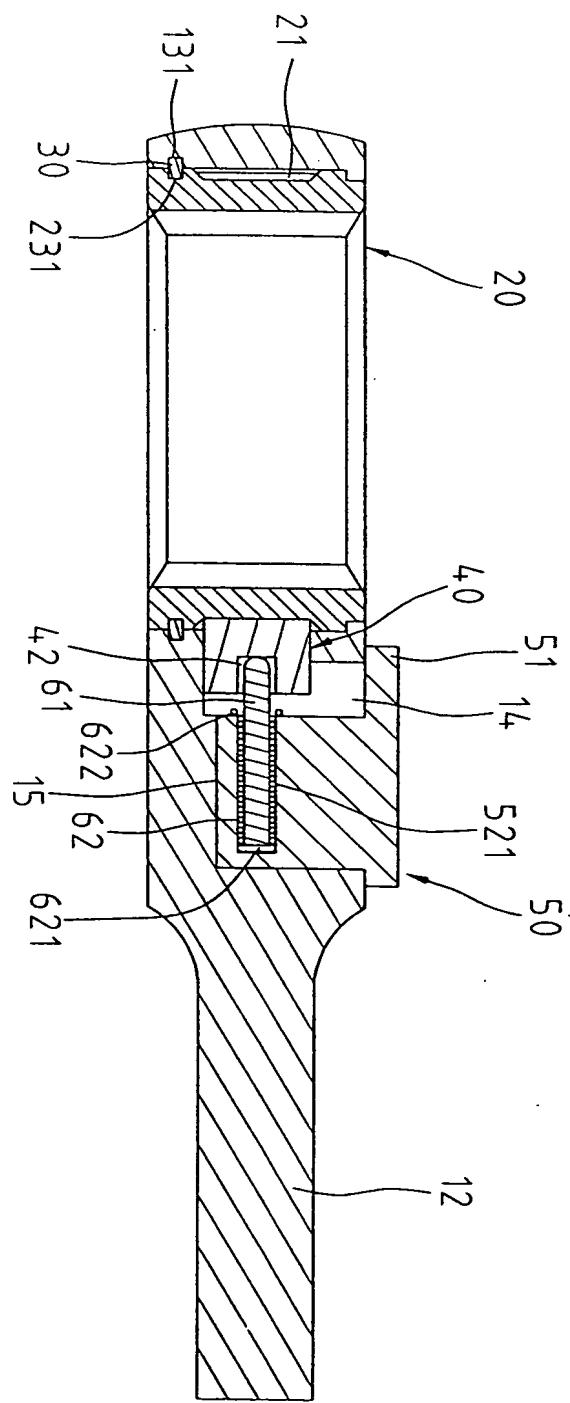


Fig. 2

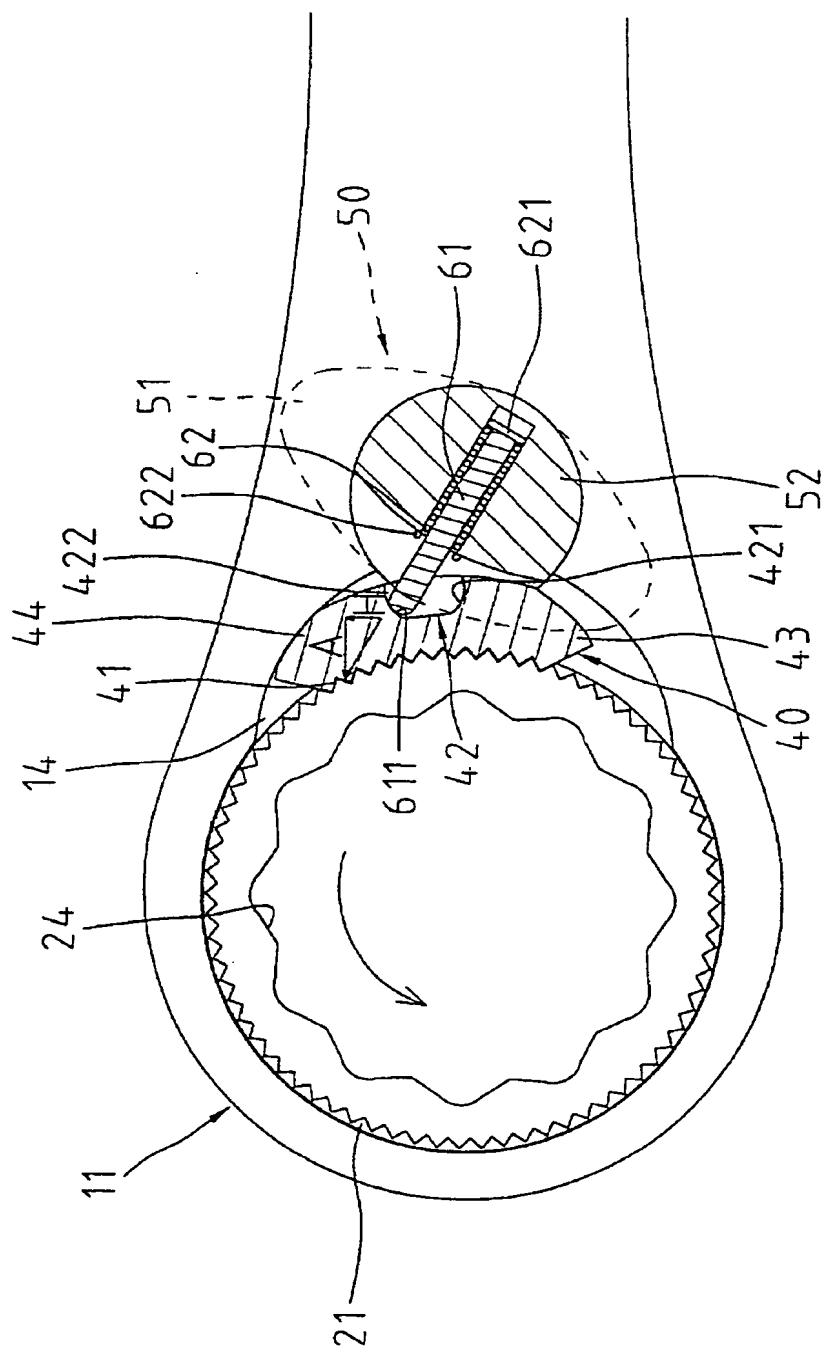
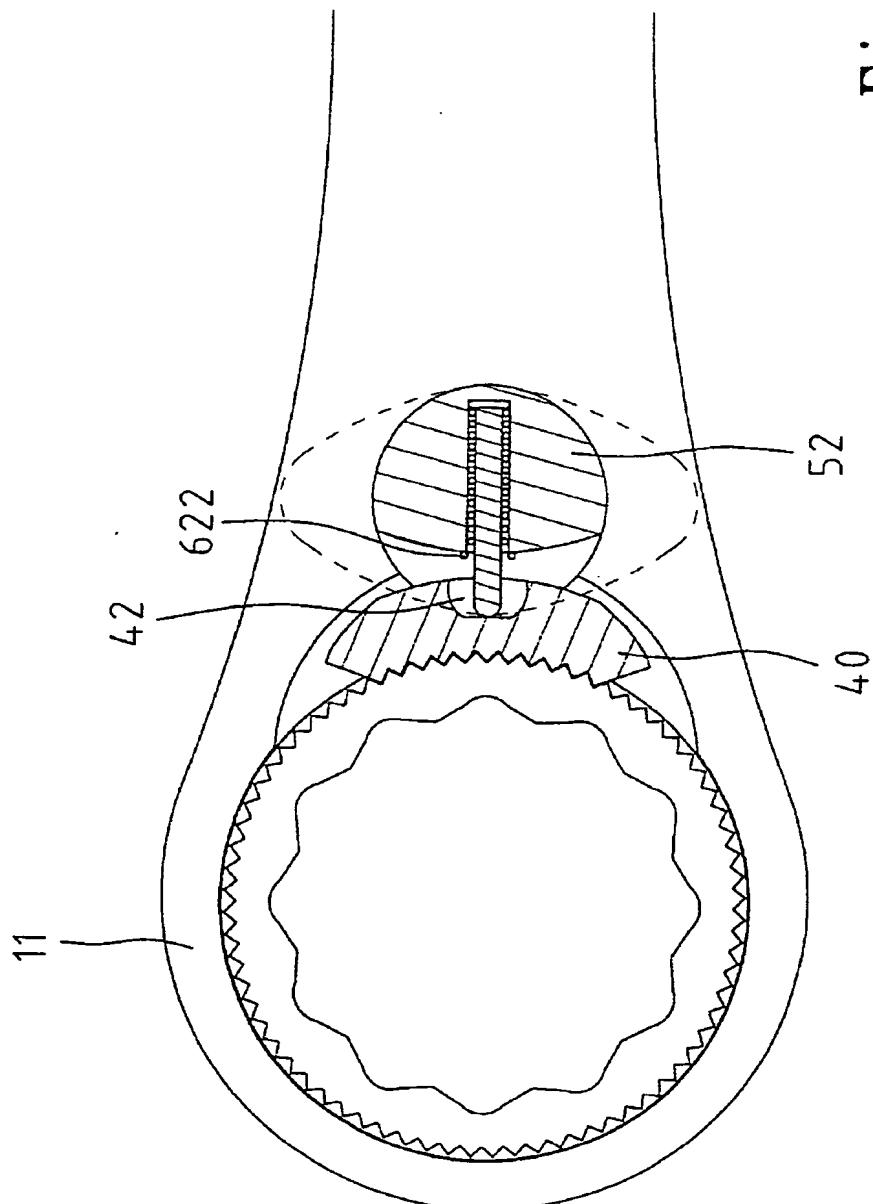


Fig. 3

Fig. 4



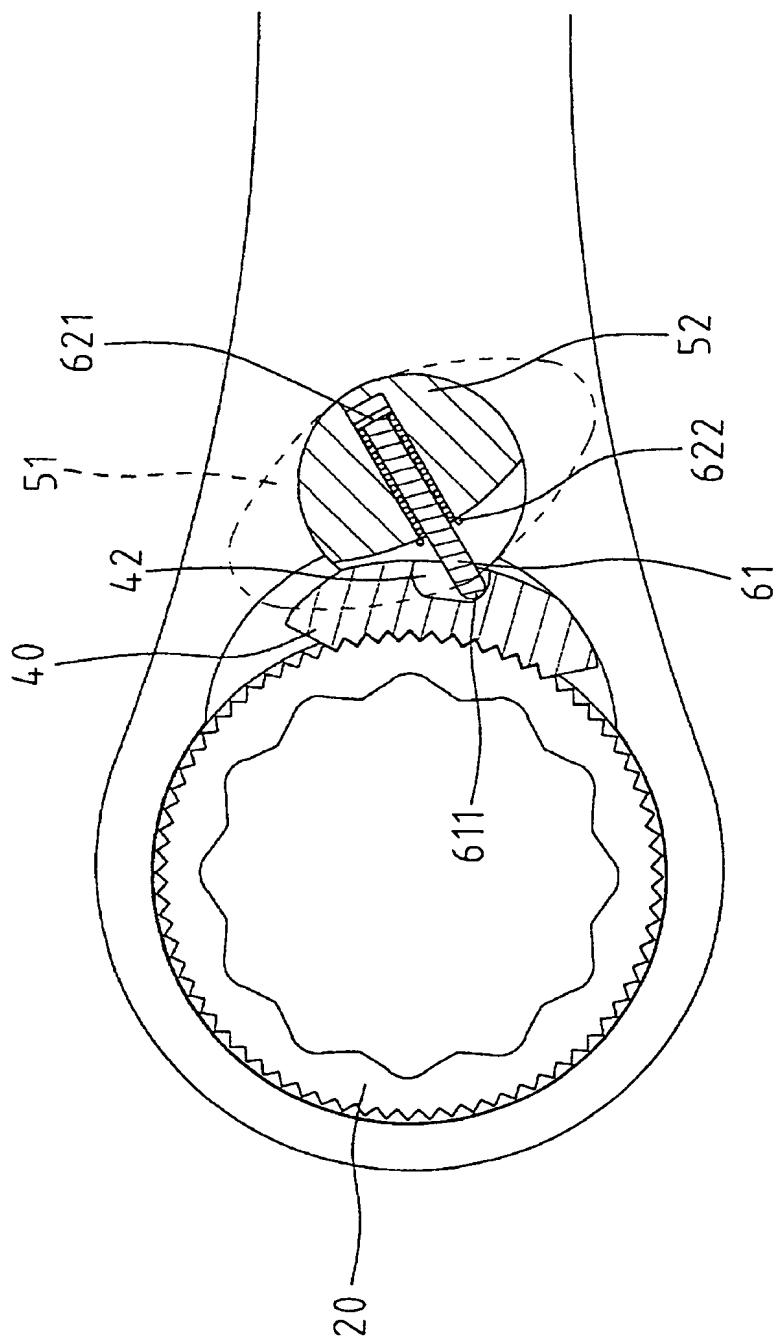
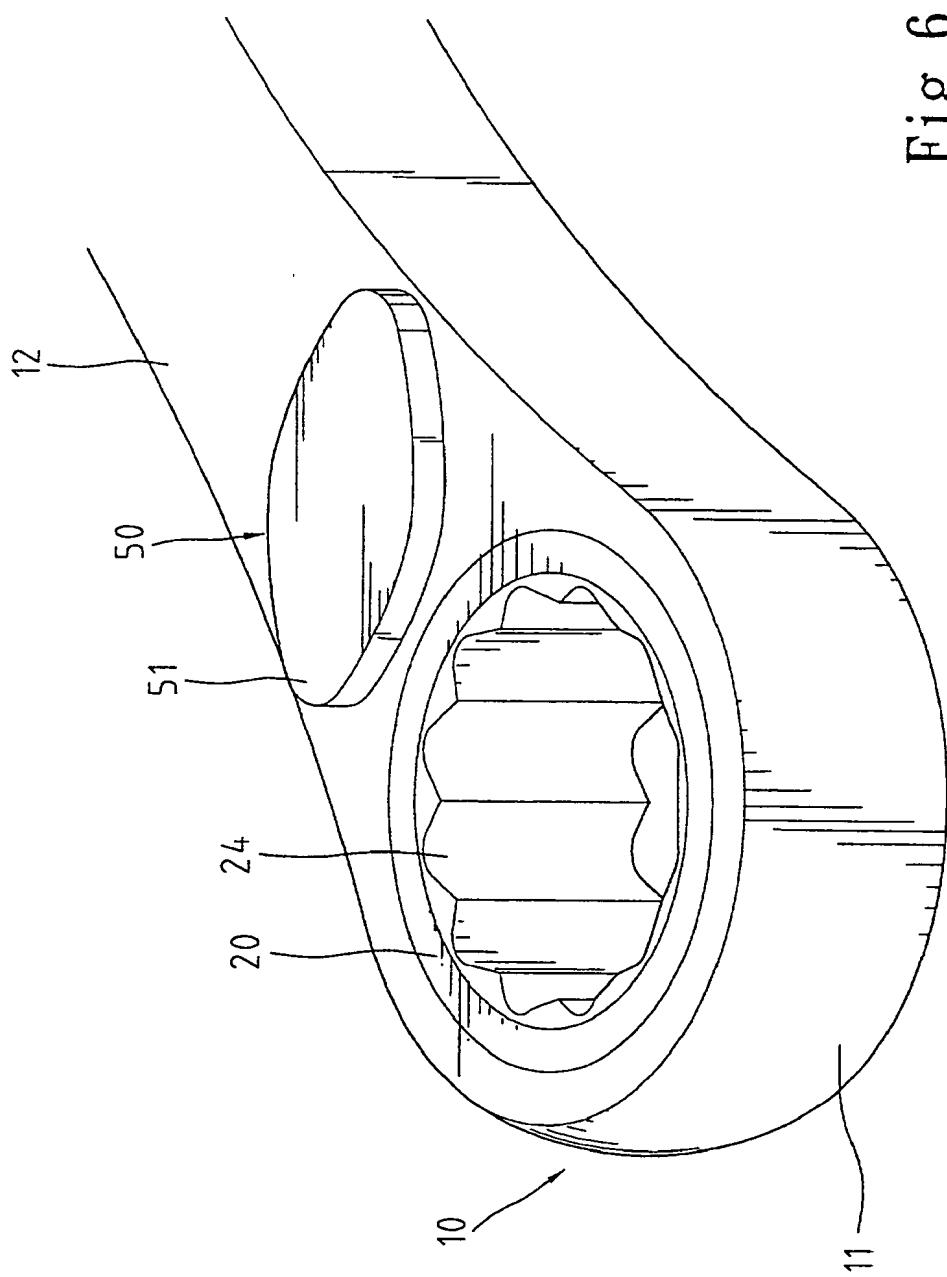


Fig. 5

Fig. 6



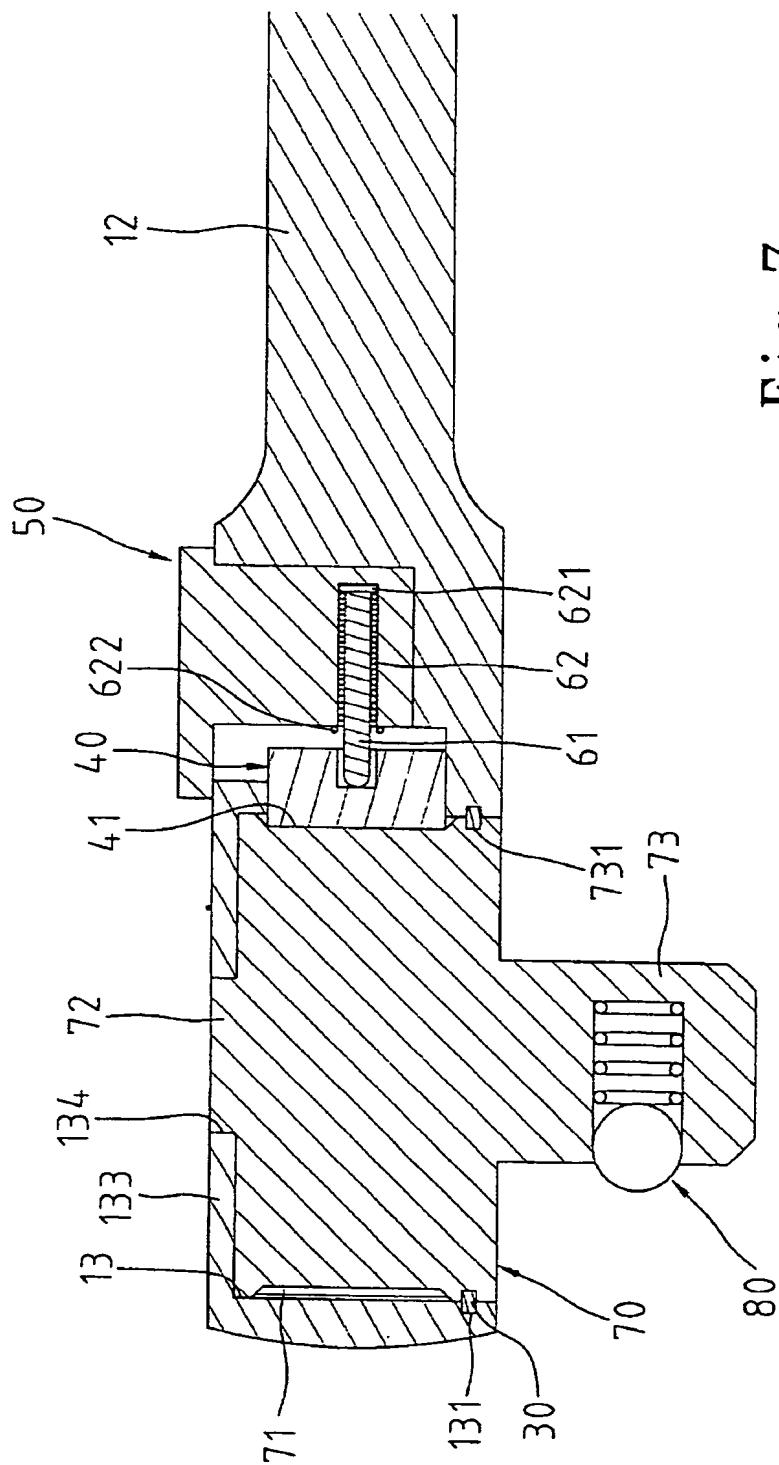


Fig. 7

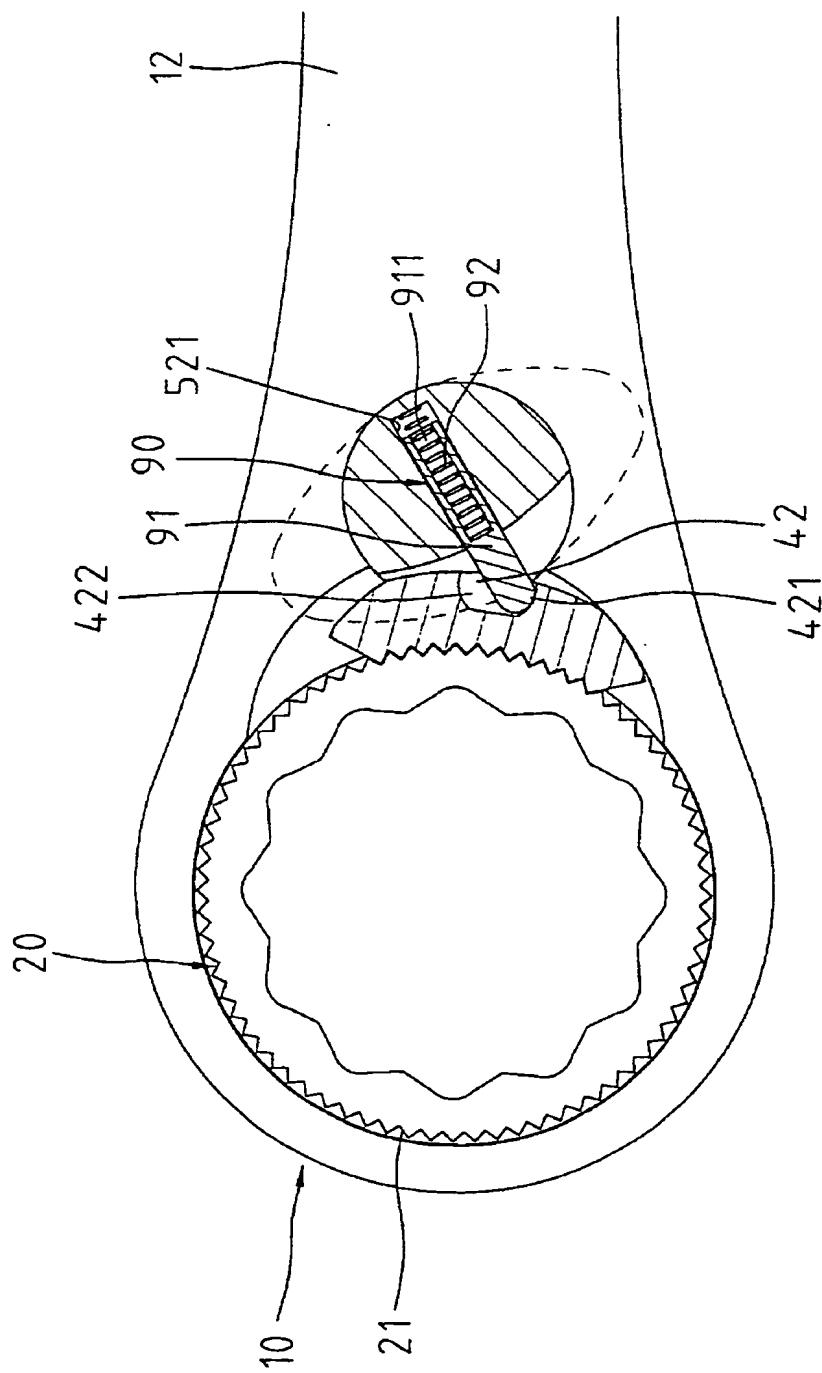


Fig. 8

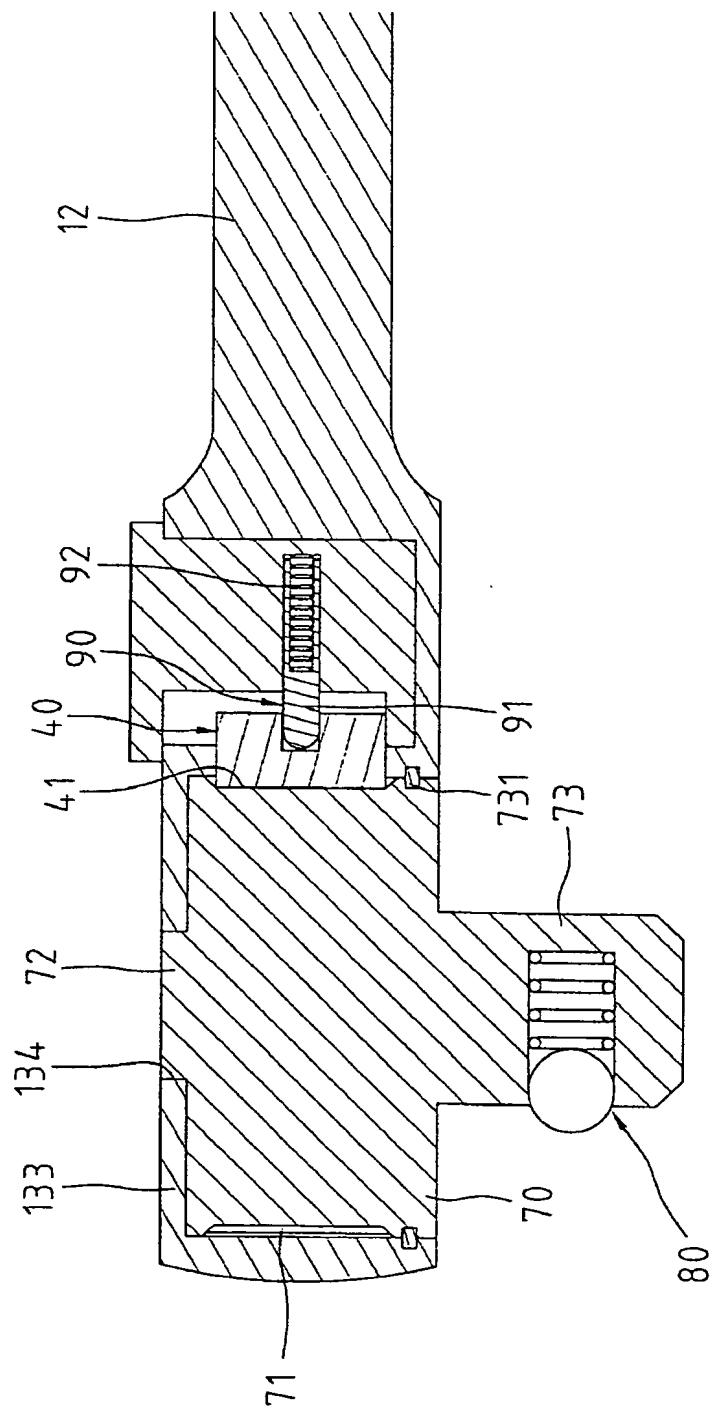
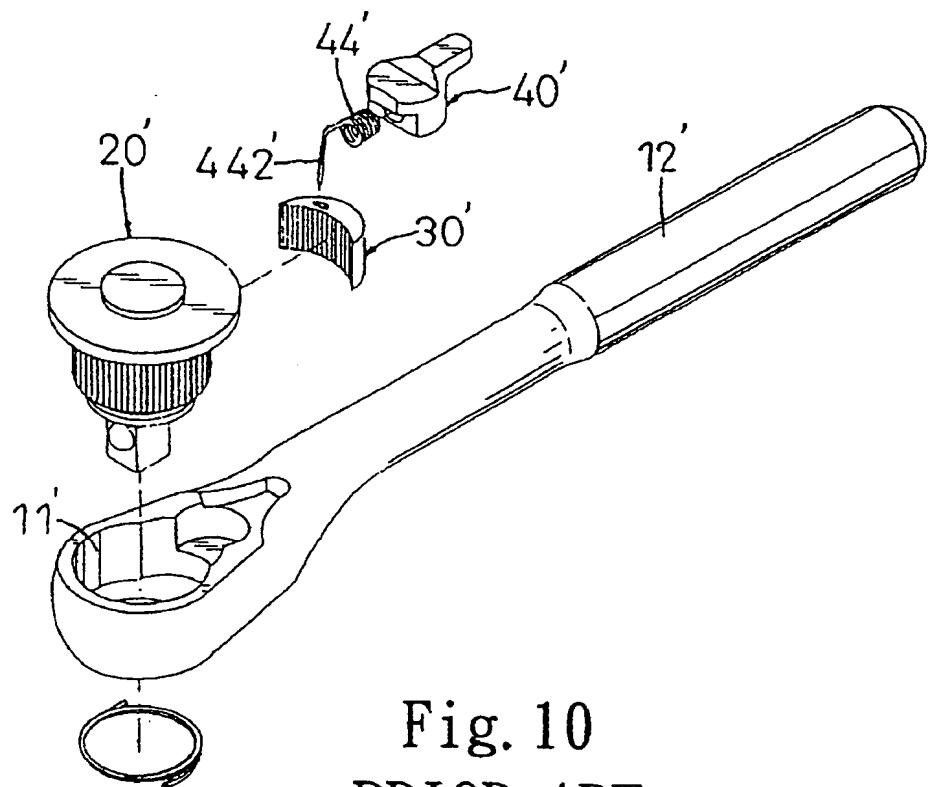


Fig. 9



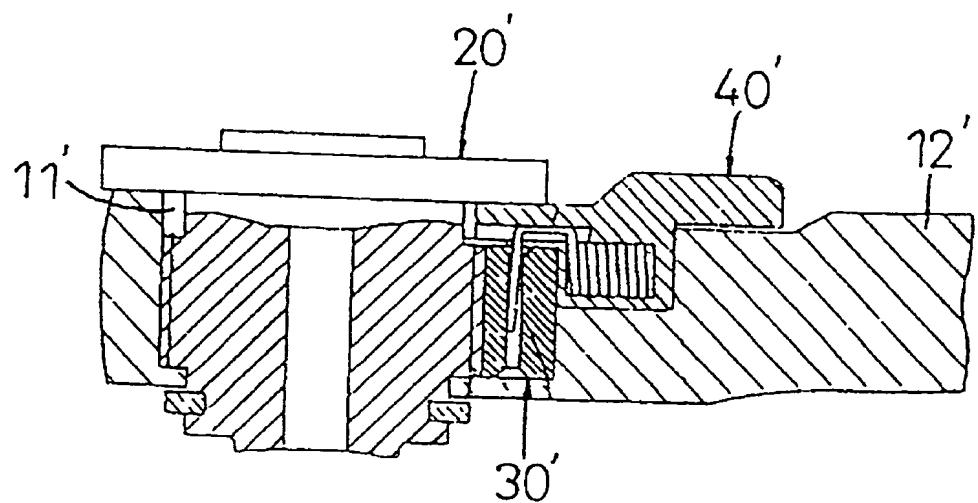


Fig. 11  
PRIOR ART

**What is claimed is:**

21. A reversible ratchet-type wrench comprising:
  - a handle;
  - a head extended from the handle;
  - a drive member rotatably mounted in the head, with the drive member including a plurality of teeth formed on an outer periphery thereof;
  - a pawl including a first side with a plurality of ratchet teeth for releasably engaging with the teeth of the drive member, with the pawl further including a second side with a recess;
  - a rotatable switch member including a turn-piece for manual operation and an actuating plate extended from the turn-piece, the switch member being switchable between two positions for changing ratcheting direction of the drive member, with the actuating plate of the switch member including a first receptacle that faces the recess of the pawl and that has a first end wall;
  - an elastic element; and
  - a peg, with the peg having a first end movably received in the recess of the pawl and a second end, with the second end of the peg being received in the first receptacle and including a second receptacle with a second end wall, with the elastic element located in the first and second receptacles between the first end wall and the second end wall, with the peg and the elastic member being rotatable with the actuating plate and biasing the ratchet teeth of the pawl to engage with the teeth of the drive member.
22. The reversible ratchet-type wrench as claimed in claim 21, wherein the drive member is a gear wheel including an inner periphery adapted to drive a fastener.
23. The reversible ratchet-type wrench as claimed in claim 21, wherein

the drive member includes a drive column for releasably engaging with a socket.

24. The reversible ratchet-type wrench as claimed in claim 23, wherein the head includes an end wall with an opening, and wherein the drive member includes a stub rotatably received in the opening.

25. The reversible ratchet-type wrench as claimed in claim 21, with the drive member being rotatably mounted in a hole of the head, wherein an inner periphery defining the hole of the head includes a first annular groove, and wherein the outer periphery of the drive member includes a second annular groove, with the reversible ratchet-type wrench further comprising a C-clip received in the first annular groove and the second annular groove, thereby rotatably retaining the drive member in the head.

40. The reversible ratchet-type wrench as claimed in claim 25, wherein the drive member includes a top and a bottom, with the outer periphery extending between the top and the bottom, with the second annular groove being spaced from the top and the bottom.

41. The reversible ratchet-type wrench as claimed in claim 21, with the switch member being rotatable about an axis, with the actuating plate extending in a direction parallel to the axis of the switch member from the turn-piece.

57. The reversible ratchet-type wrench as claimed in claim 21, with the peg having a periphery extending from the second end, with the periphery of the peg being of a size for slideable receipt within the first receptacle, with the second receptacle located within the periphery of the peg.

58. The reversible ratchet-type wrench as claimed in claim 57, with the second receptacle being spaced from the periphery of the peg.

59. The reversible ratchet-type wrench as claimed in claim 21, further

comprising, in combination: a web being defined between the handle and the head; and a cavity defined in the web, with the pawl having a first end and an opposite end, with the first end of the pawl engaging a wall portion defining the cavity in one of the two positions of the switch member and the opposite end of the pawl engaging another wall portion defining the cavity in the other of the two positions of the switch member.